Structure and Liftoff In Combustion Experiment (SLICE)

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Objective:

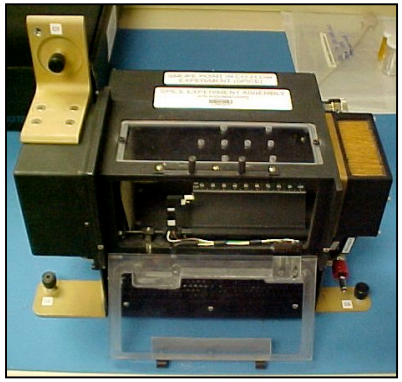
- SLICE significantly extends the SPICE investigation by introducing additional objectives that relate to flame stability and structure rather than the smoke point.
- The SLICE objectives will provide experimental results that will allow optimization of the ACME Coflow Laminar Diffusion Flame experiment, increasing its scientific return.

Relevance/Impact:

- Improved design capability through the validation of combustion models over a wider parameter range.
- Improved understanding of and ability to predict heat release and emission in microgravity fires.

Development Approach:

- The SLICE experiment will use the on orbit SPICE Experiment Assembly to conduct the SLICE science.
- Engineering model hardware used for SLICE ground testing purposes.
- Crew required to set up and operate the experiment. Video and data down-linked to the ground for evaluation.
- SLICE is scheduled to launch on Shuttle flight ULF-5 and operated during Inc 23-24 on board ISS in the Microgravity Science Glovebox facility.



SPICE Experiment Assembly

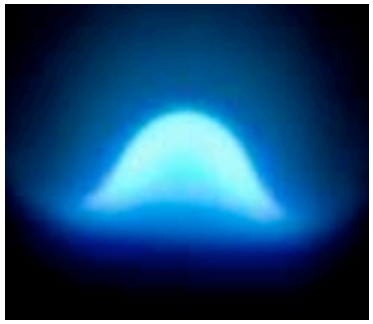


Figure shows the microgravity flame lifting phenomena

ISS Resource Requirements

Accommodation (carrier)	Microgravity Science Glovebox
Upmass (kg) (w/o packing factor)	18
Volume (m^3) (w/o packing factor)	0.096
Power (kw) (peak)	0.05
Crew Time (hrs) (installation/operations)	23 hours crew time
Autonomous Ops (hrs)	N/A (all hands on crew ops)
Launch/Increment	ULF-5/Inc 23-24

Revision Date: 10/13/2009

Project Life Cycle Schedule

Milestones	SCR	RDR	PDR	CDR	VRR	Flt Safety	FHA	Launch	Ops	Return	Final Report
Actual/ Baseline	N/A	N/A	N/A	8/1999	N/A	2/2010	5/2010	9/2010	Inc. 23.24	OPS + 4 m	Return +12m
Documentation	Website:http://spaceflightsystems.grc.nasa.gov/Advanced/ISSResearch/MSG/SPICE eRoom:https://collaboration.grc.nasa.gov/eRoom/NASAc1f1/ISSHumanResearchProjectsOffice				SRD: in work EDMP:http://edmp.grc.nasa.gov			Project Plan:https://collaboration.grc.nasa.gov/eRoom/NASAc1f1/ISSResearchProject/0_d1bde SEMP:			